

## HIPPI-ST Project Proposal

### 1 IDENTIFICATION OF PROPOSED PROJECT

1.1 TITLE: High-Performance Parallel Interface - Scheduled Transfer (HIPPI-ST)

1.2 PROPOSER: X3T11

1.3 DATE SUBMITTED: February 5, 1997

1.4 PROJECT TYPE: D - Development done within X3 TC.

### 2 JUSTIFICATION OF PROPOSED STANDARD

#### 2.1 NEEDS:

The High-Performance Parallel Interface (HIPPI) has been very successful at interconnecting different vendor's equipment at data rates of 800 Mbit/s and 1600 Mbit/s. The HIPPI-6400 projects (supporting a data rate of 6400 Mbit/s) currently underway provide an upward growth path for legacy HIPPI-based systems. The HIPPI-ST project is addressing a data transfer protocol that uses small control messages to pre-arrange data movement to maximize the performance of the underlying physical layer protocol. HIPPI-ST is intended for use with HIPPI-6400-PH (6400 Mbit/s physical layer) and HIPPI-6400-SC (switch control) implementations and other media. We need to allow full-rate, non-congesting data flow between end devices to achieve the low latency and minimum overhead required by these systems.

#### 2.2 RECOMMENDED SCOPE OF STANDARD:

This project proposal recommends the development of a high-performance data transfer protocol standard with the following goals:

- Small control messages to pre-arrange buffers at each end of the transfer.
- A message syntax that allows hardware-based message delivery to the pre-arranged buffers at the receiving end.
- Separate logical control and data channels, which may use different physical media, or may share a single physical medium.
- Support for "Get" and "Put" operations.
- Support for using buffer indices and 64-bit addresses.
- Parameters exchanged between the end devices for port selection, transfer identification, and operation validation.
- Efficient mapping between the sender's and receiver's natural buffer sizes.
- Provisions for re-sending partial transfers for error recovery.

#### 2.3 EXISTING PRACTICE IN AREA OF PROPOSED STANDARD:

Existing protocols do not provide the buffer pre-arrangement, and other features, necessary to achieve the low latency and high throughput performance required.

## 2.4 EXPECTED STABILITY OF PROPOSED STANDARD WITH RESPECT TO CURRENT AND POTENTIAL TECHNOLOGICAL ADVANCE:

The basic HIPPI standards have been in force for several years. Many vendors have produced products based on these standards, and are committed to improvements as long as they do not invalidate current products. HIPPI-6400-PH and HIPPI-6400-ST are also under development, and promise to extend the lifetime of HIPPI products. As such, the definition contained in the proposed standard is expected to be stable and long-lived.

## 3 DESCRIPTION OF PROPOSED PROJECT

### 3.1 TYPE OF DOCUMENT (STANDARD OR TECHNICAL REPORT): Standard

### 3.2 DEFINITION OF CONCEPTS AND SPECIAL TERMS: None

### 3.3 EXPECTED RELATIONSHIP WITH APPROVED X3 REFERENCE MODELS:

All HIPPI standards are intended for use in closed systems.

### 3.4 RECOMMENDED PROGRAM OF WORK:

(1) Solicit participation by the present HIPPI participants through X3T11 procedures and new participants through press releases. Invite comments by end-user organizations and invite proposals from HIPPI development organizations and other organizations that may have interest in this proposed standard.

(2) Investigate existing standards and standards projects to determine their applicability to the development effort, and establish liaisons with other standards committees as appropriate.

(3) Prepare a draft standard based on proposals submitted and other information gathered during the investigations.

(4) Test the standard through the voluntary and cooperative efforts of X3T11 Task Group members.

(5) Submit the draft proposed standard to X3 for further processing.

### 3.5 RESOURCES - INDIVIDUALS AND ORGANIZATIONS COMPETENT IN SUBJECT MATTER:

The current membership of X3T11 consists of representatives from all parts of the computer industry including semiconductor chip manufacturers, large mainframe system manufacturers and Government agencies. Members of X3T11 have expressed their desire to participate and cooperate in the development of this proposed standard.

There are sufficient resources to complete the definition of this standard without delaying work on other standards.

### 3.6 RECOMMENDED X3 DEVELOPMENT TECHNICAL COMMITTEE:

It is recommended that this project be assigned to TC X3T11, in order that the project be coordinated with work on other HIPPI standards.

### 3.7 ANTICIPATED FREQUENCY AND DURATION OF MEETINGS:

This project will make use of the regularly-scheduled bimonthly X3T11 plenary meetings. Informal Working Groups will be organized on an ad-hoc basis to discuss specific subjects where appropriate.

### 3.8 TARGET DATE FOR INITIAL PUBLIC REVIEW (MILESTONE 4):

February, 1998.

### 3.9 ESTIMATED USEFUL LIFE OF STANDARD:

It is anticipated that this standard will have a useful life of over 10 years.

## 4 IMPLEMENTATION IMPACTS

### 4.1 IMPACT ON EXISTING USER PRACTICES AND INVESTMENTS:

The proposed standard will provide a migration path complementary to existing practices and investments in basic HIPPI services. It will provide a means to leverage user investments in those services to new application areas.

It is likely that isolated adverse effects would occur in any case through non-standard evolution or revolution.

### 4.2 IMPACT ON SUPPLIER PRODUCTS AND SUPPORT:

The proposed standard will provide an upward growth path that complements and enhances existing supplier products and support schemes. The proposed standard will result in expanded applications for existing and conceived products in both the channel and network markets. It is likely that isolated adverse effects would occur in any case through non-standard evolution or revolution.

### 4.3 TECHNIQUES AND COSTS FOR CONFORMITY ASSESSMENT:

The committee will consider the results of testing provided to the committee through the voluntary efforts of the participants in X3T11. With this method all costs are borne by the organizations of the various participants and have for the most part been mainly an adjunct of their normal development costs.

### 4.4 LEGAL CONSIDERATIONS: None known

## 5 CLOSELY RELATED STANDARDS ACTIVITIES

### 5.1 EXISTING STANDARDS:

- (1) X3.183-1991, High-Performance Parallel Interface - Mechanical, Electrical, and Signalling Protocol Specification (HIPPI-PH);
- (2) X3.210-1992, High-Performance Parallel Interface - Framing Protocol (HIPPI-FP);
- (3) X3.218-1993, High-Performance Parallel Interface - Physical Switch Control (HIPPI-SC);
- (4) X3.222-1993, High-Performance Parallel Interface - Encapsulation of ISO 8802-2 (IEEE Std 802.2) Logical Link Control Protocol Data Units (HIPPI-LE).

### 5.2 X3 STANDARDS DEVELOPMENT PROJECTS:

- (1) X3T11 Project 818-R for a revision to X3.218-1993, HIPPI - Physical Switch Control (HIPPI-SC), in development in the X3T11 committee;
- (2) X3T11 Project 1026-D for HIPPI - Mapping to Asynchronous Transfer Mode (HIPPI-ATM), in development in the X3T11 committee;
- (3) X3T11 Project 1117-D for HIPPI - Serial Specification (HIPPI-Serial), in development in the X3T11 committee.
- (4) X3T11 Project 1213-D for HIPPI - 6400 Mbit/s Physical Layer (HIPPI-6400-PH), in development in the X3T11 committee.
- (5) X3T11 Project 1231-D for HIPPI - 6400 Mbit/s Physical Switch Control (HIPPI-6400-SC), in development in the X3T11 committee.

### 5.3 X3 STUDY GROUPS: None

### 5.4 OTHER RELATED DOMESTIC STANDARDS DEVELOPMENT EFFORTS: None

### 5.5 ISO/IEC JTC 1 STANDARDS DEVELOPMENT PROJECTS:

The HIPPI standards are to be submitted as project requests to ISO JTC1/SC25. International HIPPI standards are in the ISO/IEC 11518-x series.

### 5.6 OTHER RELATED INTERNATIONAL STANDARDS DEVELOPMENT PROJECTS:

None

### 5.7 RECOMMENDATIONS FOR COORDINATING LIAISON: None

### 5.8 RECOMMENDATIONS FOR CLOSE LIAISON: None